Factors Affecting Family Medicine Residents' Decision to Provide Obstetric Care: A Concept Mapping Study

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ABSTRACT

Background Approximately 25% of family physicians provided obstetric (OB) delivery care in 2000, but today that proportion has declined to <7%, affecting availability of delivery care in rural areas. Prior research shows that training experiences influence residents' decision to include OB care in their post-training practice.

Objective To explore factors affecting family medicine (FM) residents' decision to provide OB delivery services in future practice and to use this information to strengthen residency OB training.

Methods This cross-sectional study used concept mapping, a participatory mixed-methods approach that produces a visual representation of key concepts. It included FM residents and recent graduates participating in 2022-2023 at 3 Mid-Atlantic programs that share a tertiary-level university-affiliated hospital as training site for OB deliveries.

Results Eighteen of 60 eligible subjects (30%) completed the generation/brainstorming and structuring data collection steps online, and 36 (60%) completed an interpretation session. Eight clusters of factors emerged: (1) motivation to practice OB care/patient relationship; (2) supportive training and modeled practice; (3) competing interests and necessity of additional training; (4) location and needs of community; (5) burnout cluster; (6) challenges of long-term competency and skills; (7) lack of enough learning opportunities and support; (8) lack of respect and inclusion. Participants rated training factors as both highly important and highly changeable, including "fragmented teaching," "feeling inadequate or inadequately prepared," and "ease or difficulty getting the required number of deliveries." Based on these findings, participating residency programs have adjusted training structure, adding a faculty liaison who provides all OB rotation orientation.

Conclusions This study identified factors affecting FM residents' decision-making around providing OB care in their future practice, including supportiveness of training environment and adequacy of learning opportunities.

Introduction

By 2030, the United States is expected to have a shortage of maternity care clinicians, including obstetrician-gynecologists, certified nurse midwives, and family physicians (FPs), resulting from both declining number of clinicians and increasing patient demand.[1,2] At the same time, the United States has the highest maternal mortality rate among high-income countries, with 32.9 deaths per 100 000 live births in 2021.[3] Current/projected shortages of obstetric (OB) clinicians are greatest in rural areas, where FPs fill a critical need for delivery care.[4-7] However, both the proportion and number of FPs providing OB delivery care have declined since 2000, when nearly a quarter of FPs provided delivery care, to today's average of less than 7%.[4,8-13]

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Editor's Note: The online supplementary data contains all participant statements, go-zone plot details, and cluster maps showing the quantitative ratings for importance and feasibility to address, enhance, or change.

Research points to mixed reasons for fewer FPs providing delivery care, including high malpractice insurance costs, barriers to hospital privileges,[8,9,14] challenges finding FP positions with OB care components, and lifestyle considerations related to OB care on-call burden.[12,15,16] Studies examining the OB training experiences of family medicine (FM) residents or their decision-making process about including OB care in their future practice have reported similar concerns among residents while also describing positive predictive factors.[17-22] For example, studies between 1987 and 2022 reported that residents' decision-making was influenced by the number of deliveries performed and interactions with attending obstetricians during residency as well as their views about lifestyle and their intended practice site.[18,19,21] A 2013 survey of FM residency program directors found that graduates of university-affiliated residency programs who received greater supervision by FM faculty preceptors, completed more than 80 deliveries, and exercised greater autonomy in decision-making were more likely to provide OB care in practice.[20]

However, OB training requirements for FM residency programs changed in 2014 when the Accreditation Council for Graduate Medical Education (ACGME) replaced volume-based requirements for OB deliveries with competency-based requirements. This change removed the minimum requirement for total OB deliveries and continuity deliveries (which previously had been set at 40 and 10, respectively).[23] Per the ACGME in 2023, residents are required to experience a minimum of 20 vaginal deliveries and at least 200 hours (or 2 months) of OB care experience with some element of continuity in antenatal/postnatal care. This change was intended to benefit smaller programs where residents had access to fewer deliveries, but outcomes remain inconclusive.[22,24]

Given the changes to FM OB training in the past 10 years, as well as the extended time since completion of studies investigating resident experiences, further research with FM residents is needed to update and expand prior findings so that training programs can maximize their potential to adequately prepare those who wish to provide OB care. Additionally, because of expected national shortages of OB care clinicians, and because FPs provide delivery care in rural areas and underserved communities where specialist care is limited,[4-7] FPs providing OB care are key to equitable maternity care access for these communities.

The objective of this study was to explore factors influencing FM residents' decision to provide OB delivery care in future practice and to use this information to strengthen residency OB training.

KEY POINTS

What Is Known
Training experiences influence family medicine (FM) residents' decisions to include obstetric care in their eventual practice, and the proportion of family physicians providing obstetric care continues to decline.

What Is New
This study used concept mapping, a participatory mixed-methods approach, to explore factors affecting FM residents' decisions to provide obstetric delivery services; the study identified 8 clusters of factors influencing their decisions: motivation, supportive training, competing interests, location, burnout, long-term competency challenges, learning opportunities, and respect/inclusion.

Bottom Line
Intentionally addressing these factors in residency programs offers a way to potentially increase the number of FM graduates deciding to provide obstetric care.

Methods

This cross-sectional observational study used concept mapping, a participatory mixed-methods approach, to explore FM residents' experiences with OB training. Concept mapping is a 6-step process that uses specialized software to produce a visual representation (cluster map) of ideas (concepts) as expressed by research participants. TABLE 1 describes the 6-step concept mapping process, which includes qualitative generation of "items" in participants' own words combined with quantitative ratings and groupings of those statements.

Concept mapping creates "clusters" of ideas based on how participants themselves group the ideas. Additionally, the software visually represents the Likert-scale ratings in 3-dimensional "stacking" of the clusters. The software produces additional data visualizations, including pattern matches and go-zone plots. A pattern match is a visual comparison of each cluster's ratings on importance or feasibility to change. Go-zone plots are prioritization matrices that use aggregate rating values assigned to each item to plot the items as points on a 4-quadrant matrix with the scales of the rating questions (importance and feasibility to change) as the x and y axes. The groupwisdom software (Concept Systems Inc, Build 2022.30.10) also generates a numerical stress value for the cluster maps that indicates the goodness of fit with an expected range of 0.205 to 0.305. A lower numerical stress value indicates an exceedingly low probability that arrangement of points on the cluster map is due to random chance.[25] Examples of all data visualization types are included in the Results section.

Concept mapping is particularly suited to exploring how a group views a particular topic[26] and to identifying actionable next steps.[27] Because participants respond online to research prompts when they have time, concept mapping allows participants to actively generate the data so that final results represent their perspectives.[28] Also, because clinicians can contribute to the study online whenever they have time, it can be effective at involving those with time constraints.[29] However, while concept mapping captures key themes, the method falls short at explaining the relationships between concepts and capturing nuance within the key concepts.[28,30]

Study Setting and Participant Recruitment

This single-site study was completed at 3 Mid-Atlantic FM residency programs that share a tertiary-level university-affiliated hospital as training site for OB/deliveries. Inclusion criteria were current FM residents or recent graduates who had completed at least one OB rotation, under the supervision of an FM OB faculty preceptor. Sixty-two residents were eligible to participate when the study officially opened, though this number varied over the course of the study as

TABLE 1
Concept Mapping Process

Step	Completed By	Description
1. Preparation	Researchers	Create the focal prompt and questions
2. Generation/brainstorming	Individual participants	Respond to the focal prompt with personal experiences or perspectives
3. Structuring	Individual participants	Sort and rate all statements generated during the generation/brainstorming step, using Likert-scale rating
4. Representation	Researchers	Use the concept mapping software to create point maps and clusters that represent the relationships between statements and ratings collected from study participants
5. Interpretation	Participants working in groups	Review and name the clusters and develop narratives about their meanings
6. Utilization	Researchers and site partners	Explore how to use results for program refinement and plan for next steps

additional residents became eligible to participate after completing OB rotations. Sixty second- and third-year participants across the 3 programs had completed at least one OB rotation and thus were eligible for the study. The study target was to recruit 10 to 40 participants, which is considered an effective sample size for concept mapping exploration.[31] Participants were recruited through targeted and snowball sampling; researchers posted study flyers, announced the study at weekly didactics sessions, and emailed study details to residents. Participants who responded to study invitations were emailed a unique alphanumeric ID and instructions to log into the study's online platform.

Data Collection and Analysis

The groupwisdom software platform was used for data collection and analysis. The research team developed the focal prompt and the sorting and rating criteria, then used the groupwisdom software as described below.

Generation/Brainstorming: In this step, participants accessed the study online and contributed a minimum of 4 statements in response to the focal prompt, "What are some factors that will impact your decision to provide maternity care in your future career?" The brainstorming session was available online for 4 weeks, from October 13 to November 10, 2022.

Structuring (Sorting and Rating): Also completed individually online, this step presented each participant with a list of unique items co-created during the brainstorming stage. Duplicate statements were removed, but no changes were made to wording, grammar, or punctuation. Participants sorted those items into similar piles "according to your view of their meaning." After sorting the statements, participants used a 5-point Likert scale to rate each item from the previous list, based on the item's (1) "potential impact on a resident's decision to provide maternity care later in their career," and (2) "feasibility to be addressed, enhanced, or changed in some way."

Participants were notified via email of opening/closing dates for the structuring step, which lasted 4 weeks from November 29 through December 29, 2022. Reminder emails were sent weekly. Participants' sorting responses were eligible for inclusion in analysis if the participant sorted at least 75% of statements, a threshold set by the groupwisdom software. Participants' rating responses were eligible for inclusion when they at least minimally used the full rating scale; responses that rated all statements the same were rejected.

Representation: After participants completed the generation/brainstorming and the structuring steps, the research team used the groupwisdom software to produce visualizations of the data. These included point maps, cluster maps, pattern matches, and a series of go-zone diagrams, all generated from data collected in the brainstorming session and through participant sorting and rating activities.

Interpretation: The interactive interpretation step involved 4 sessions: 3 in-person luncheons (one session at each residency site, held February through April 2023) and one online session (held via Zoom, April 2023). During these sessions participants reviewed, discussed, and interpreted the cluster maps produced by the concept mapping software, contextualizing research findings based on their own experience. Research assistants took notes during the sessions,

which were audio-recorded, transcribed, and reviewed. Participant quotations were abstracted, and examples are included in the Results section.

Utilization: Initial utilization of findings is also included in the Results section.

Participants gave informed consent prior to each research study activity and received a $50 gift card upon completing each step (generation/brainstorming, structuring, and interpretation).

The University of Pittsburgh Institutional Review Board approved this study (#21110106).

Results

Eighteen of 60 eligible subjects (30%) completed the generation/brainstorming and structuring steps online, and 36 (60%) completed an interpretation session. The majority of study participants were female, and average age was 30.45 years. See TABLE 2 for participant demographics and FIGURE 1 for participant flow through concept mapping steps. The generation/brainstorming step produced 107 statements. After duplicate statements were removed, 80 unique statements remained.

Thirty-four participants attended 1 of 3 in-person sessions and 2 attended the online session. At interpretation sessions, researchers presented 3 software-generated cluster maps to participants and together selected the cluster map that best fit the data. The 8-cluster map was selected as the best data representation (FIGURE 2). The stress index for this map was 0.2910, falling within the expected range, indicating goodness of fit and low probability that the cluster map groups were random.

At interpretation sessions, residents worked in small groups to name the 8 clusters. Researchers later selected final cluster names from among the names that residents generated across all 4 sessions. See FIGURE 2 and online supplementary data Appendix A with the list of all items grouped by cluster.

Cluster 1: Motivation to Practice OB Care/Patient Relationship contained 10 statements, including "developing relationships with patients over time," "ability to take care of patients," and "overall interest in reproductive care and reproductive justice."

Cluster 2: Supportive Training and Modeled Practice contained 5 statements, including "Seeing FM practitioners perform at the same level" and "gained knowledge in confidence."

Cluster 3: Competing Interests and Necessity of Additional Training contained 10 statements, including "not interested in OB," "costly malpractice insurance," "uncertain about opportunities available without OB fellowship," and "need to be faculty or in underserved area to practice family medicine OB."

Cluster 4: Location and Needs of Community contained 6 statements, including "interested in pre- and postnatal care only, but most practices don't have the opportunity," and "availability of OB care in the area."

Cluster 5: Burnout Cluster was the largest, with 16 statements, including "demanding hours," "high acuity," "work-life balance," and "on-call schedule."

Cluster 6: Challenges of Long-Term Competency and Skills contained 7 statements, including "inconsistency of patient panel" and "the need to keep up L&D [learning and development] knowledge would take priority over other interest."

Cluster 7: Lack of Enough Learning Opportunities and Support contained 13 statements, including "feeling inadequate or inadequately prepared," "limited exposure to routine vaginal deliveries where I felt like I had a full hands-on experience," and "acceptance by OB colleagues."

Cluster 8: Lack of Respect and Inclusion contained 13 statements, including "not enough opportunities to learn OB care because the number of OB patients is low for family medicine," "fragmented teaching," "different experience with each attending and midwife," "preference is often given to OB residents," and "feeling welcome in training space alongside OB trainees."

Participants in each interpretation session also reviewed the pattern match and go-zone plot, shown below in FIGURES 3 and 4. The pattern match compares each cluster's ratings on importance and feasibility to change (FIGURE 3). Go-zone plots show the items as points on a 4-quadrant matrix with the rating questions (importance and feasibility to change) as the x and y axes. Participants primarily rated items as 3 or above.

The go-zone plot (FIGURE 4) shows how participants prioritized items based on the 2 rating questions of importance and feasibility to change (both with scales of 1-5) and includes in the upper right-hand quadrant an easy-to-read breakdown of which items participants considered both highly important and feasible to adapt. For example, items rated both highly important and highly amenable to change included #32 Fragmented teaching, #33 Quality of education in training, #12 Feeling inadequate or inadequately prepared, #16 Wouldn't feel comfortable doing it with the knowledge base I have, #60 Overall comfort in ALSO (Advanced Life Support in Obstetrics) situations, and #19 Ease or difficulty getting the required number of deliveries. For a complete list of items in each quadrant see online supplementary data Appendix B.

Abstracted participant quotations, made during interpretation sessions, are included below. One participant described the importance of gaining the respect of OB

TABLE 2
Participant Demographics

Demographics	n (%)
Participants in Generation/Brainstorming and Structuring (Online), N=20	
Year in training	
PGY-1	6 (30)
PGY-2	7 (35)
PGY-3	5 (25)
Completed residency	2 (10)
Gender	
Female	14 (70)
Male	7 (35)
Nonbinary or third gender	0 (0)
Prefer not to say	0 (0)
Age, years	
Mean	30.45
Median	30
Range	26-42
History of interest in providing OB care	
Never interested in providing OB care in future practice	7 (35)
Interested at start of residency *and* currently interested in providing OB care in future practice	8 (40)
Interested at start of resident but *not* currently interested in providing OB care in future practice	4 (20)
Not interested at start of residency but *now* interested in providing OB care in future practice	1 (5)
Prior hands-on OB training in medical school	
Hands-on experience, unaffected by the pandemic	9 (45)
Hands-on experience, but limited by the pandemic	6 (30)
No hands-on experience, but limit was unrelated to pandemic	3 (15)
No hands-on experience, limited by the pandemic	1 (5)
No response	1 (5)
Participants in Interpretive Sessions (In-Person and Online), N=36	
Year in training	
PGY-1	12 (33)
PGY-2	10 (28)
PGY-3	13 (36)
Completed residency	1 (3)
Gender	
Female	22 (61)
Male	14 (39)
Nonbinary or third gender	0 (0)
Prefer not to say	0 (0)

Abbreviations: PGY, postgraduate year; OB, obstetric.

attending physicians at the training site: "A little bit of competency … can really impact your ability to … perform in those situations which then … help people feel confident in you and … we just didn't get as much … education upfront." Participants also noted that high patient acuity at the training site was a factor. One said:

"I … did some time at [an alternate training site] and … I do remember thinking, Wow! 'This is so eye-opening, just … to get a sense of … what it would be like in a community setting.' Even the patients were less, like lower acuity … it made me realize that there's a culture at [the regular training site] of … how sick the patients are and … that feeds into … OBs being very cautious."

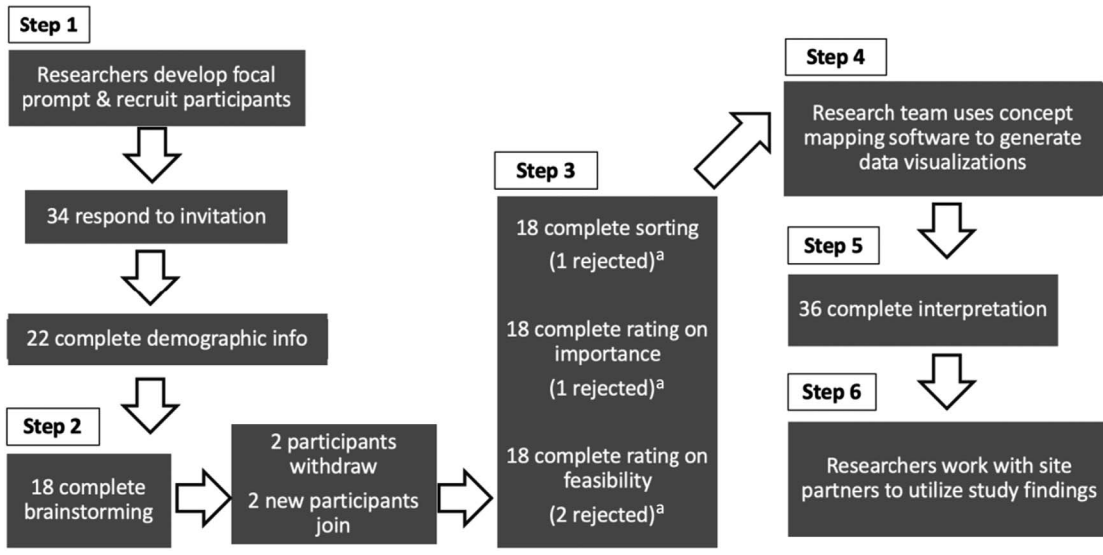

FIGURE 1
Concept Mapping Steps and Participant Flow Through Study

[a] The software rejects responses when less than 75% are sorted or when all statements are rated the same.

One third-year resident said that the concept map represented her training accurately: "I am surprised how well it captures my experience."

Utilization of study findings at the participating residency programs has included the addition of an OB faculty liaison who provides initial orientation for all OB rotations and who attends monthly meetings with the FM OB faculty team. Additionally, the residency sites in this study have implemented a tiered OB practice system to expand faculty options for continued OB service and to increase residents' exposure to positive FM OB faculty preceptors.

Discussion

Findings from this small study provide insight into factors that influence FM residents' decision-making about providing OB care in their future practice.

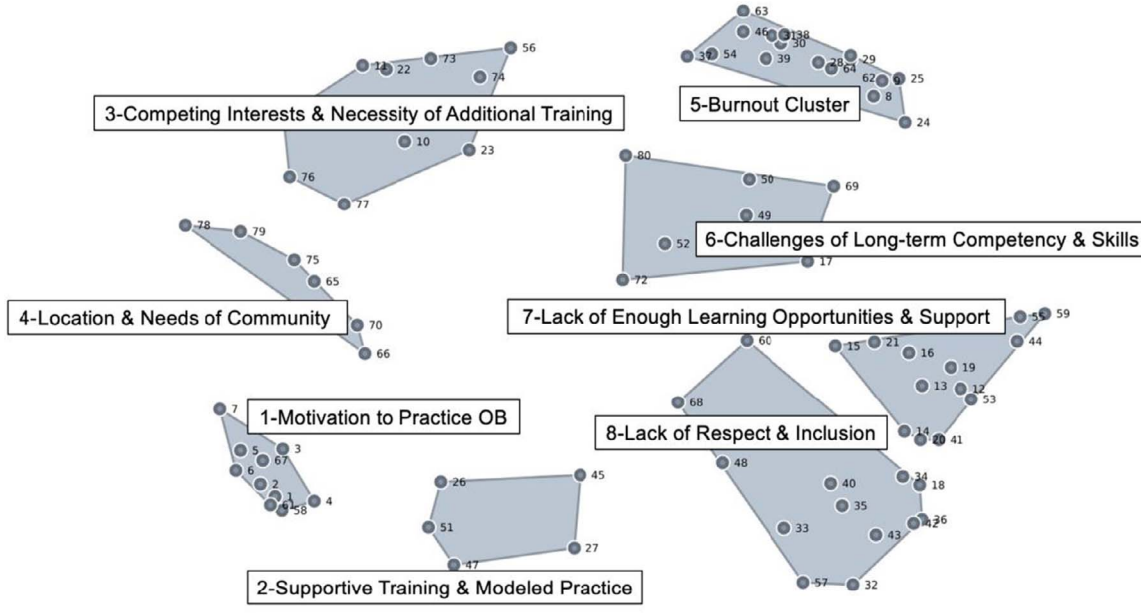

FIGURE 2
Cluster Map

Abbreviation: OB, obstetric.

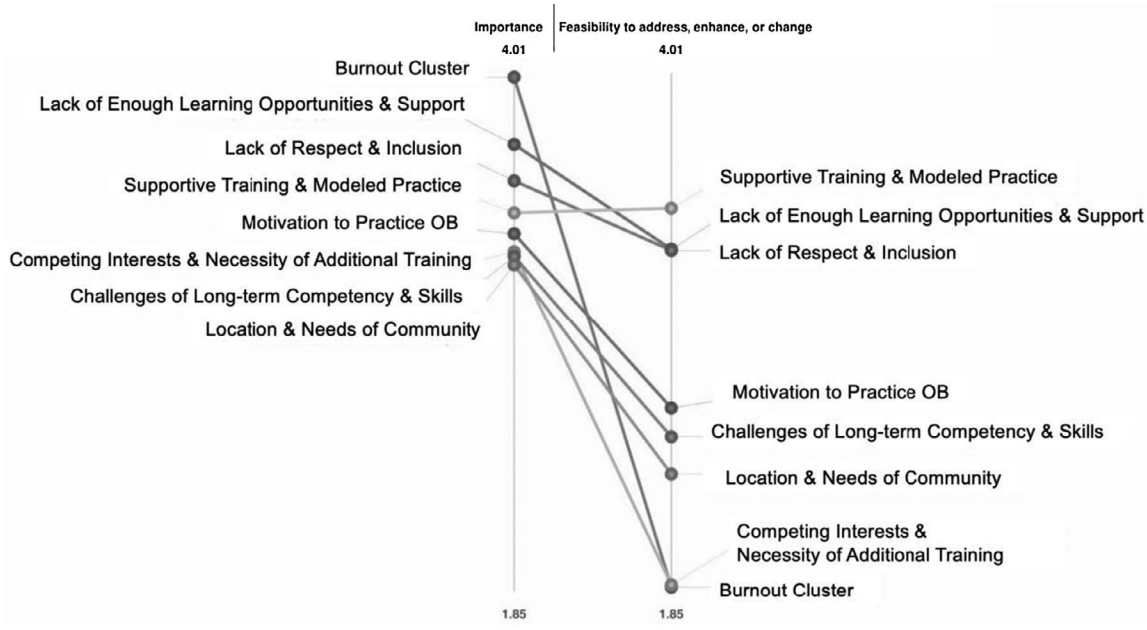

FIGURE 3
Pattern Match of Clusters

Abbreviation: OB, obstetric.
Note: This figure shows the concept clusters rated for importance on the left and for feasibility to change on the right.

The go-zone plot provides examples of key training factors that highly influence residents' decision-making that FM programs could adjust to improve training experiences, as described in the example statements included above. Overall, participants rated the clusters Lack of Enough Learning Opportunities and Support (#7), Lack of Respect and Inclusion (#8), and Supportive Training and Modeled Practice (#2) as both highly

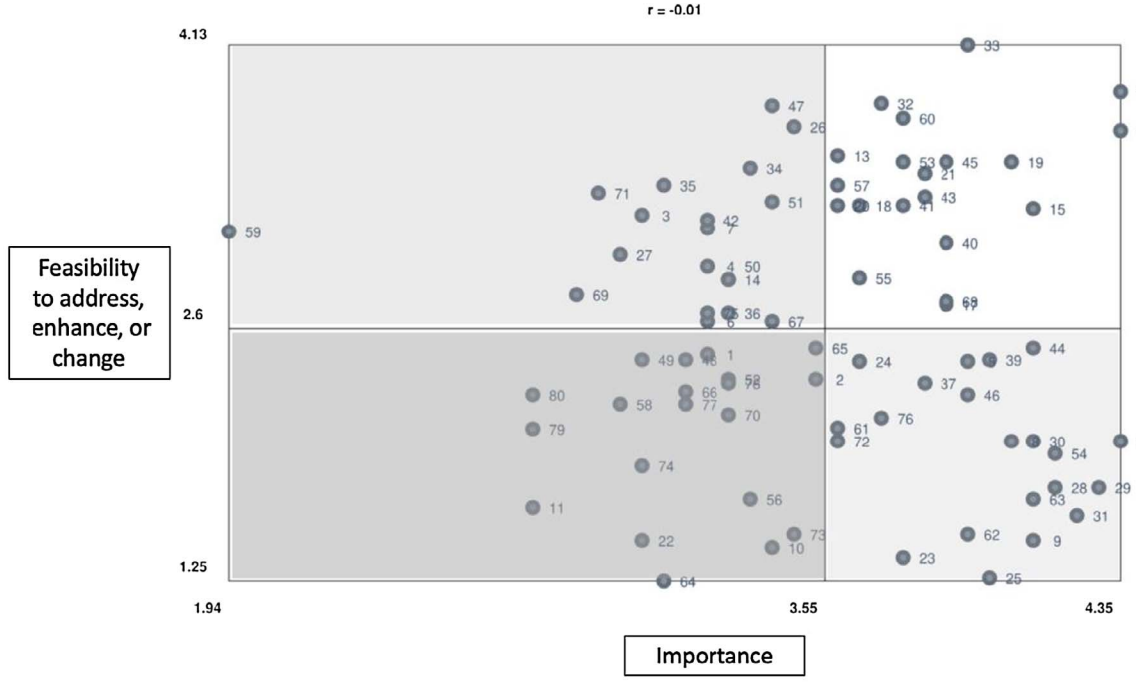

FIGURE 4
Go-Zone Plot

Note: This figure shows how participants prioritized items based on the 2 rating questions of importance and feasibility to change (both with scales of 1-5) and includes in the upper right-hand quadrant an easy-to-read breakdown of which items participants considered both highly important and feasible to adapt.

important to their decision-making and the most feasible to address, enhance, or change. Notably, the first 2 cluster names connote negative interpretations and list potential barriers to continued OB care provision, while the last cluster name reflects a positive interpretation and lists components that training programs could seek to continue or augment. These clusters also are 3 of the 5 mostly highly rated clusters for importance in influencing decision-making about future OB care provision. This finding is promising news that OB practice skills and confidence can be nurtured and developed among residents by focusing on key domains of the training environment and rigor, by providing adequate support, building confidence, and fostering inclusion at training sites. However, these 3 clusters also suggest that FM residents, at least in this study, reported that their training experience was lacking in supportive OB learning opportunities.

These findings echo previous work noting that residents are more likely to continue providing OB care when they train with strong FM OB role models in a supportive learning environment.[18-22] Interestingly, the other 2 clusters rated highest for importance were the Motivation to Practice OB Care, and the Burnout Cluster, which one participant group labeled simply the "nature of OB care." Both clusters were rated as markedly less feasible to change. For the first cluster, this finding suggests that training may be unlikely to persuade non-OB-interested residents to provide OB care later in their careers. For the second cluster, this finding overlaps with reasons both FPs and residents gave for not providing OB care in the research cited earlier, which included weighing competing interests, the demands of on-call, and availability of positions that include delivery practice.[12,15,16,19]

Study results, although limited in their generalizability to other FM residency programs, demonstrate that residents' decision-making process about future practice scope can be fluid during training.[17-22] Interestingly, participants did not mention recent federal-level changes about abortion availability as a potential factor in decision-making. This may be because of existing state-level abortion laws in Pennsylvania, where the programs are located. This topic merits future exploration as a potential factor in decision-making.

Notably, however, half the participants (9 out of 18) in the early study steps indicated they had planned to provide OB care when beginning residency, but nearly half (4 out of those 9) said they changed that decision *during training*. Only one participant who entered residency not interested in providing OB care in future practice reported changing their decision during training. These findings suggest that some aspects of training can—and do—play a role in dissuading some OB-interested residents from including OB delivery care in their future practice, a concerning possibility that also merits additional exploration.

Given the growing need for OB care clinicians, training programs should examine training structure and strive to ensure that OB-interested residents receive the training and mentoring they need in a professionally inclusive setting that nurtures and sustains that interest.

Conclusions

This mixed-methods approach identified factors affecting FM residents' decision to provide OB delivery services in future practice and identified ways to strengthen residency OB training. Factors associated with residents' decision-making about future practice scope included the supportiveness of training environment and adequacy of learning opportunities.

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